

Cover Sheet

Title

Pre-Service Teachers' Impact on Student Learning: Three-Year Study of the Impact on Student Learning Project

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Impact on Student Learning Project**

Abstract

With the demand for a demonstration of continuous progress as an accountability gauge in public schools, teachers are compelled to examine assessment data for each of their pupils¹. This data analysis, in turn, should help teachers gauge their instructional practices and differentiate instruction so that all can reach proficient levels of achievement. Teacher education programs, too, have been asked to provide performance-based programs that demonstrate pre-service teachers can positively affect individual student learning. One way for teacher education programs to demonstrate this measure of success is by having pre-service teachers show their understanding of differentiated instruction, test data collection and analysis, and reflection. To reach this goal our Teacher Education faculty implemented an assignment titled “Impact on Student Learning Project” during the Fall 2006 semester. The intent of this paper is to describe the project and summarize the results culled from pre-service teachers who have completed the project from Fall 2006 until Spring 2009.

Key Words

Assessment
Pre-service teachers
Reflection
Student Learning

With the demand for a demonstration of continuous progress as an accountability gauge in public schools, teachers are compelled to examine assessment data for each of their pupils². This data analysis, in turn, should help teachers gauge their instructional practices and differentiate instruction so that all can reach proficient levels of achievement. Teacher education programs, too, have been asked to provide performance-based programs that demonstrate pre-service teachers can positively affect individual student learning. One way for teacher education programs to demonstrate this measure of success is by having pre-service teachers show their understanding of differentiated instruction, test data collection and analysis, and reflection. To reach this goal our Teacher Education faculty implemented an assignment titled “Impact on Student Learning Project” during the Fall 2006 semester. The intent of this paper is to describe the project and summarize the results culled from pre-service teachers who have completed the project from Fall 2006 until Spring 2009.

Theoretical Framework

Every country has mandated standardized testing to monitor issues of accountability and to rank its education program with those throughout the world. Governments and school administrators are responsible for the dissemination and analysis of test results to their constituents. These standardized tests are an important gauge to measure learning. However, most teachers judge achievement through the instruction and assessments that take place in their individual classrooms. Designing and interpreting formative and summative assessments is a critical step in gauging the

² The term *student* and *students* refer to the pre-service teachers, and the term *pupil* and *pupils* refer to the children in their classroom

students' achievement of the school's curriculum in relationship to mastery of the objectives of standardized tests.

Teacher educators are looking for ways to demonstrate pre-service teachers' impact on their pupils' learning. Hamel and Merz (2005) state that teacher evaluation has typically been "grounded in the behaviors, qualities, and growth that *teachers* exhibit rather than in changes exhibited by students..." (p. 158). The paradigm shift--to evaluate teachers by their pupils' achievement--changes the emphasis from teaching to learning.

Emphasizing learning instead of teaching brings a different set of skills and knowledge to monitor pupil achievement. First, pre-service teachers must be able to understand how pupils think from various perspectives (Hamel & Marz, 2005). Because of the multiple dimensions and complexity of the classroom (Hargreaves, 1994; Lortie, 1975), pre-service teachers tend to teach to the "whole," teach to the "middle," covering the content without regard to individual learning styles and diverse capabilities of pupils. Hamel and Merz (2005) explain that pupil understanding is elusive, influenced by multiple factors; therefore, schools and teachers deliver the same content to "all sections of a class or use common textbook or program based assessments" (p. 164).

The most complex dimension of teacher knowledge is understanding how and why pupils respond to instruction (Hamel & Merz, 2005). This approach emphasizes the ability to interpret pupil responses within the contexts of the school and classroom settings and the diverse pupil population. Hamel and Merz (2005) explain novices must learn how their own "understanding of student understanding" can drive instruction: "...novice teacher learning is often reflected less in 'what happens' during a particular lesson or unit (whether the sequence worked as intended, whether pupils exhibited

learning goals) but more in how the pre-service teacher *makes sense* of student response” (p. 159).

Recent models of teaching and learning include formative assessment as an important element of instruction (Shepard et al., 2005). Having pre-service teachers engage in ongoing assessment keeps them attuned to differentiating instruction to meet the needs of all pupils, as well as to continually reflect on their lesson design and instructional strategies. Otero (2006) writes that through formative assessment, “the teacher learns about students’ conceptual understandings at given points in time and, therefore, becomes better equipped to help students move further in their understandings with respect to an academic objective” (p. 250).

Hamel and Merz (2005) write that teacher reflection, flexibility in thinking, multiple interpretations, making adjustments, and articulating existing frames of reference are the keystones for teacher competency and growth. Reflection encourages novices to think and question, “why they teach, what they teach, and to whom they teach” so that instructional strategies can be effective for all pupils (Pultorak & Barnes, 2009). Researchers have found that novices have difficulty gauging the strengths and weaknesses of a lesson. Risko, Vukelich, and Roskos (2009), having researched teacher reflection the last two decades, observed a shift from “hands-off instruction that had limited impact on developing teachers’ reflective abilities to forms of guided instruction that deepened reflective thinking” (p. 48). Researchers have employed different forms of instruction to assist novices to reflect systematically on their instruction. Some of these methods include guided questions, case analysis, journal writing, small group discussion, and peer coaching (Risko, Vukelich & Roskos, 2009).

Our Teacher Education faculty believes formative assessment and data analysis are also critical to meaningful reflection. Thus, we implemented the Impact on Student Learning Project to have our pre-service teachers employ various instructional methods, reflect on the success of the methods vis a vis pupil achievement, and implement different strategies as needed.

Contextual and Program Background

Our Teacher Education Program, located in a small college of a major university in Pennsylvania, is both state and nationally accredited. We offer initial programs in early childhood and elementary teacher certification. Eligible students enroll in the program their junior year (fifth semester), and they are placed in cohorts throughout the program. Students complete a field assignment each semester in both urban and suburban settings, gradually increasing the number of days and hours in the schools as they progress through the program. Full-time faculty members who instruct the students during a particular semester supervise during the field observations, and each student is assigned to a specific host teacher in each school. Currently, 80 students are enrolled in the program, and 20 faculty members teach in this program, as well as in the Master's in Education in Teaching and Curriculum program.

Students are first assigned a variation of the Impact on Student Learning Project during their seventh semester (the semester before they student teach). Seventh-semester students are placed in an urban setting 12 hours a week for 9 weeks. During this period, students plan a project that impacts the specific needs of the children in that classroom. The host teacher in consultation with the college supervisor may help the pre-service

teacher select the type / scope of the project from a suggested list of projects that are included in the syllabus.

The Project

The objectives for our pre-service teachers to become more proficient are these: (1) determine the effect of instruction on all pupils' learning; (2) guide decisions about future instruction and plans to improve upon every pupil's performance; (3) communicate performance results to others; and (4) reflect on their performance as teachers.

Early in the teacher certification preparation program, the pre-service teachers receive instruction in differentiating their methods to meet the needs of their pupils. Much of this background comes from the work of Carol Tomlinson. She states, "Learning to differentiate well requires rethinking one's classroom practice and results from an ongoing process of trial, reflection, and adjustment in the classroom itself" (Tomlinson & Imbeau, 2010, p.13). The pre-service teachers are prepared in the following critical components of lesson planning to meet the needs of all pupils:

1. Designing instruction appropriate to their pupils' stages of development, learning styles, strengths, and needs.
2. Selecting approaches that provide opportunities for different performance modes.
3. Adjusting instruction to accommodate pupils' learning differences or needs.
4. Being aware of different cultural contexts and aligning learning opportunities to address these differences. (Tomlinson & Imbeau, 2010, p. 5)

Using "backward design" (Wiggins & McTighe 2006), the pre-service teachers learn that differentiated instruction can only be implemented after they clearly articulate what the pupils must learn through measurable objectives that align to the curriculum and

standards. The next step is to devise assessments to measure if the objectives have been met. Then, by paying careful attention to the assessment goals, they are ready to plan instruction that meets the needs of all their pupils. By planning “backwards,” the pre-service teachers reach an appreciation for the need to use different methods of instruction to have all pupils reach the objectives.

Reflection is a major tenet of our Teacher Education Program. Each semester pre-service teachers are obligated to systematically reflect on their learning. As they progress through the program and participate in field experiences, they reflect on their understanding of what they learned theoretically in their college classes to the realities of practice in the elementary school classroom. Finally, they are introduced to ways to compile pupil data to analyze the success or failure of their instruction in light of test results. Through reflecting on their analysis, they are able to construct better lessons and differentiate instructional strategies to meet the needs of all pupils.

The Project is introduced to our pre-service teachers during the semester of their final field experience. Our aim at this stage is for pre-service teachers to understand all the nuances of the project so they can complete a more detailed, larger-scale plan when they student teach. Pre-service teachers receive specific instruction in the required components of the project prior to their field experience and have several opportunities for peer and instructor review throughout the semester.

The assignment is structured so that pre-service teachers feel confident in this first attempt to understand and measure their impact on pupil learning. As previously explained, the host teacher and college supervisor help the student develop a project to implement and assess.

They select an individual pupil, a group of pupils, or an entire class whom they are teaching and/or tutoring to evaluate the impact of their instruction on pupil learning. During the field experience, our pre-service teachers are involved in tutoring. When they student teach, they have the opportunity to assess on a larger scale; for example, an entire class of pupils. During student teaching, they select a series of at least three lessons or an entire unit and decide on a method of data collection to measure the impact of their instruction upon pupil learning, using assessments that will generate data suitable for analysis. These assessments include inventories, pre- and post-tests, teacher-made quizzes and tests, to name a few.

Major Components

The six major components of the project will be described, and Emily's³ work will be included to demonstrate the structure and details that are expected.

Contextual Factors

In assessing the impact of instruction on pupil learning, pre-service teachers interpret the results within the contexts of the school and classroom settings and the diverse pupil population. Knowledge of contextual factors is important because these factors often explain pupil behaviors and achievements. In their analysis, pre-service teachers investigate these contextual factors for those pupils they are evaluating:

- geographic location, community and school population, socio-economic profile, and race/ethnicity
- physical features of setting, availability of equipment/technology and other resources

³ All names are pseudonyms.

- pupil characteristics such as age, gender, race/ethnicity, exceptionalities (disability and giftedness), developmental levels, culture, language, interests, learning styles or skill levels.

As an example, Emily described Rose Elementary School, one of seventeen schools in the City School District, housing roughly 400 pupils:

This small city pre-kindergarten through sixth grade school is located in the state's capital, where the population consists of nearly 47,000 residents and 24,000 housing units (U.S. Census Bureau). Although the majority of the pupil population is African American, there are also many other races and ethnicities represented in the school. The school houses 298 African American pupils, 51 Hispanic pupils, 44 Caucasian pupils, 4 Asian pupils, and 1 American Indian pupil. Additionally, Rose Elementary is located in an urban portion of the city, so the socio-economic status of the population is low. Because of this, roughly 390 pupils, or 98%, are eligible for free or reduced lunch provided by the school.

At Rose Elementary, I was placed into Ms. Smith's second grade classroom for my first rotation. In her classroom, there were seven boys, ten girls, and a wide range of learning styles and abilities. Moreover, this classroom contained a wide variety of behavior problems. Most of the students in the class were diagnosed with Oppositional Defiant Disorder (ODD), with typical behaviors including refusal to complete tasks or follow directions, being spiteful, or destruction of property. Additionally, my mentor teacher believed that a few of the students suffered from Mental Retardation (MR) and Conduct Disorder; however, these were merely her professional opinions.

Objectives

In most models of instructional planning, teachers must make decisions about assessment before instruction begins. With this understanding of the importance of writing, implementing, and assessing measurable objectives, our pre-service teachers, with the assistance of their host teachers and College supervisors, select two to four measurable objectives appropriate for their pupils. In writing the objectives, students are to address the following questions:

- What will pupils accomplish during this lesson?
- To what specific level (i.e. 75% accuracy) will the pupils perform a given task in order for the lesson to be considered satisfactorily accomplished?
- Exactly how will the pupils show that they understood and learned the goals of your lesson?
- How do the objectives align with the state and/or national standards?

Finally, they communicate the objectives to their pupils.

As an example, Emily, an elementary education pre-service teacher, completed her project with Jake, who was currently reading below grade level. Emily explained:

My host teacher told me that she had an ideal student for the assignment, Jake Miller . Once I knew the student with whom I would be working, I spent the next week observing Jake, so I could learn about his interests, abilities, and weaknesses in the classroom. Jake knows all short vowels and long vowels sounds, and has kindergarten and first grade sight words mastered. His comprehension skills are good, and he has the ability to answer basic facts and

higher-level questions when asked about what he has heard or read. Additionally, he has excellent vocabulary and processing skills.

Emily noted three measurable objectives:

1. Objectives for first activity:

Given flashcards with words beginning with th-, ch-, sh-, and wh-, the pupil will organize them into categories according to their initial sound with an acceptable level of accuracy as described on a rubric.

2. Objectives for second activity:

Given flashcards depicting various images of diagraphs, the pupil will recognize th-, ch-, sh-, and wh- beginning sound words with an acceptable level of accuracy as described on a rubric.

3. Objectives for third activity:

a. Given flashcards depicting various images of diagraphs, the pupil will recognize th-, ch-, sh-, and wh- beginning sound words with an acceptable level of accuracy as described on a rubric.

b. Given flashcards with spelling words, the pupil will correctly spell the word with an acceptable level of accuracy as described on a rubric.

Assessment Plan

Pre-service teachers match their assessments, both formative and summative, with the objectives. They describe the assessments they will conduct before, during, and after

instruction. They may assess pupils in an authentic/alternative manner, a traditional manner, or a combination of both.

As an example, Emily explained how she first assessed Jake using a spelling inventory. Because of his scores, Jake was placed in the “Letter Name-Alphabetic” spelling stage (Bear, Invernizzi, Templeton, & Johnston, 2008). In order for Jake to move to the next stage, she designed three learning activities that helped improve his ability to recognize and spell sound diagraphs. These activities included a word sorting activity, a bingo game, and a creative review game. Emily observed Jake informally to assess his abilities, weaknesses, and improvements during each lesson with the use of specifically designed rubrics. Post-test results demonstrated Jake had improved, bringing his spelling stage to “Within Word Pattern.” Emily’s spelling assessment rubric she devised is presented below:

Activity #1: Word Sort			
Criteria:	Exemplary (10-8 points)	Acceptable (8-5 points)	Unacceptable (5-0 points)
Given flashcards with words beginning with th-, ch-, sh-, and wh-, pupil will organize them into categories according to their initial sound with an acceptable level of accuracy.	* Pupil completes the word sorting activity with 90-100% accuracy. * No teacher assistance is needed.	* Pupil completes the word sorting activity with 76-89% accuracy. * Little teacher assistance is needed.	* Pupil completes the words sorting activity with less than 75% accuracy. * Moderate teacher assistance is needed.

Activity #2: Initial Sounds Bingo			
Criteria:	Exemplary (10-8 points)	Acceptable (8-5 points)	Unacceptable (5-0 points)
Given flashcards depicting various images of diagraphs, pupil will recognize th-, ch-, sh-, and wh-beginning sound words with an acceptable level of accuracy.	* Pupil recognizes at least 3 th-, ch-, sh-, and wh- beginning sound words with their flashcard representation. * No teacher assistance needed.	* Pupil recognizes 2 th-, ch-, sh-, and wh-beginning sound words with their flash card representation. * Little teacher direction needed.	* Pupil recognizes only 1 th-, ch-, sh-, and wh-beginning sound words with their flash card representation. * Moderate teacher direction needed.

Activity #3: Review Game			
Criteria:	Exemplary (5 points)	Acceptable (4-3 points)	Unacceptable (2-0 points)
Given flashcards depicting various images of diagraphs, student will recognize th-, ch-, sh-, and wh- beginning sound words with an acceptable level of accuracy.	*Pupil recognizes at least 3 th-, ch-, sh-, and wh- beginning sound words with their flashcard representation.	* Pupil recognizes at least 2 th-, ch-, sh-, and wh- beginning sound words with their flashcard representation.	* Pupil recognizes only 1 th-, ch-, sh-, and wh- beginning sound word with their flashcard representation.
Given flashcards with spelling words, pupil will spell the word with an acceptable level of accuracy.	* Pupil spells the correct word at least 90% of the time. * The pupil provides an excellent meaningful sentence.	* Pupil spells the correct word 76-89% of the time. * The pupil provides a somewhat meaningful sentence.	* Pupil spells the correct word less than *75% of the time. No sentence is given.

Design for Instruction

After administering the *pre-assessment*, pre-service teachers analyze pupil performance relative to the objectives. The results of the pre-assessment must be depicted in a format that allows the pre-service teachers to find patterns of pupil performance relative to each learning goal. By using a table, graph, or chart, pre-service teachers describe the emerged pattern to guide future instruction or modify the original objectives.

Pre-service teachers describe at least three teaching activities that reflect a variety of instructional strategies/techniques and explain why they are planning those specific activities. In their explanation for each activity, pre-service teachers include the following: how the content relates to their objectives; how the activity stems from their pre-assessment information and contextual factors; what materials/technology they need to implement the activity; and how they plan to assess learning during and/or following the activity.

Using Emily's project as an example, she explained she began by researching ideas for learning activities that would help Jake after observing and conducting the pre-

assessment. She noted the textbook, *Words Their Way*, was a fantastic resource that provided many creative instructional ideas. Most importantly, they all were designed for pupils who were in the middle of the Letter Name-Alphabetic spelling stage.) Emily's 5-Day Instructional Plan is presented below:

Day	Planned Instruction	Activity Objective(s)	Activity Standard(s)
1 st Day 9/29/09	<ul style="list-style-type: none"> Conduct a pre-assessment, which will be a spelling inventory with Jake. Observe abilities, strengths, and weaknesses throughout the assessment. Score spelling inventory. 	Not Applicable	Not Applicable
2 nd Day 10/8/09	<ul style="list-style-type: none"> Introduce first learning activity, word sort. This activity will reinforce pupil's ability to say and recognize short vowels with diagraphs, specifically th-, ch-, sh-, and wh-beginning blends. Have pupil recognize and pronounce the th-, ch-, sh-, and wh- beginning blends. Then have pupil recognize and read various th-, ch-, sh-, and wh-beginning words, making sure to assist as needed. Pupil will organize the words into categories according to their initial sound. Activity duration 15 minutes. 	Given flashcards with words beginning with th-, ch-, sh-, and wh-, pupil will organize them into categories according to their initial sound with an acceptable level of accuracy as described on rubric.	Standard 1.1C: Use knowledge of phonics, word analysis (e.g., root words, prefixes, and suffixes), syllabication, picture and context clues to decode and understand new words during reading.
3 rd Day 10/14/09	<ul style="list-style-type: none"> Introduce second learning activity "Initial Sounds Bingo." Activity will reinforce the pupil's ability to identify th-, ch-, sh-, and wh- beginning sound words. Present pupil with flashcards depicting images of beginning diagraph words. Pupil will recognize and identify each flashcard with the "th", "ch", "sh", or "wh" blend by placing a chip on the correct space on the bingo board. When pupil has four bingo chips in a row, game is complete. Activity duration 15 minutes. 	Given flashcards depicting various images of diagraphs, pupil will recognize th-, ch-, sh-, and wh-beginning sound words with an acceptable level of accuracy as described on rubric.	Standard 1.1C: Use knowledge of phonics, word analysis (e.g., root words, prefixes, and suffixes), syllabication, picture and context clues to decode and understand new words during reading.
4 th Day 10/20/09	<ul style="list-style-type: none"> Introduce third learning activity, a review game. Activity will reinforce 	Given flashcards depicting various	Standard 1.1C: Use knowledge of

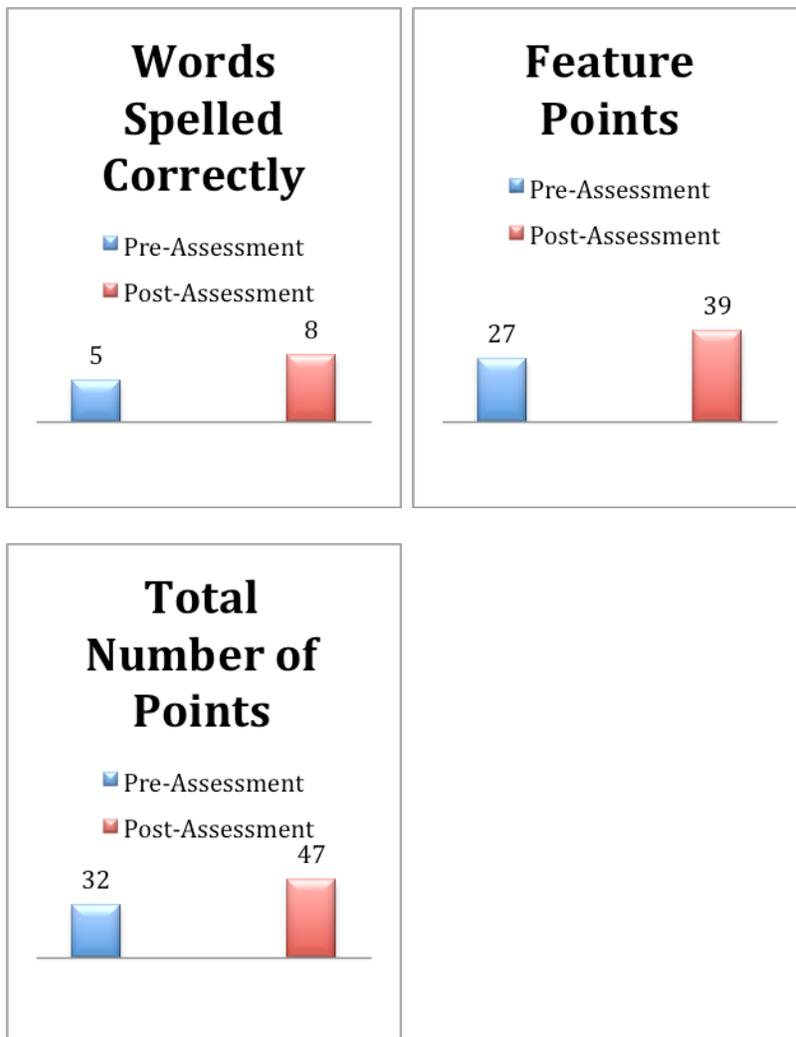
	<p>the concepts of past two learning activities by having pupil recognize and spell various th-, ch-, sh-, wh-beginning sounds words.</p> <ul style="list-style-type: none"> Pupil will participate in a review game. When pupil lands on a blue space on the game board, he will be asked to spell a word and then use that word in a meaningful sentence. When pupil lands on a green space, he will be asked to identify the correct initial sound depicted in the image. When pupil reaches the end of the game board, the review game is complete. 	<p>images of digraphs, pupil will recognize th-, ch-, sh-, and wh-beginning sound words with an acceptable level of accuracy as described on a rubric.</p> <p>Given flashcards with spelling words, pupil will correctly spell the word with an acceptable level of accuracy as described on a rubric.</p>	<p>phonics, word analysis (e.g., root words, prefixes, and suffixes), syllabication, picture and context clues to decode and understand new words during reading.</p> <p>Standard 1.1E: Acquire a reading vocabulary by identifying and correctly using words (e.g., antonyms, synonyms, categories or words).</p>
<p>5th Day 10/21/09</p>	<ul style="list-style-type: none"> Conduct a post-assessment, which will be a spelling inventory, to observe his abilities, strengths, and weaknesses. Score the spelling inventory, looking for gains. 	<p>Not Applicable</p>	<p>Not Applicable</p>

Analysis of Student Learning

Pre-service teachers conduct a *summative assessment*, which is correlated with the pre-assessment. They then summarize the data with descriptive statistics (e.g. gain scores, class means pre and post, composite records of observations) in the form of a graph, chart, or table. Finally, in a narrative, they interpret the data for evidence of impact on learning.

Continuing with Emily's example, she explained that Jake spelled only 5 out of 26 words correctly in the pre-assessment. She then explained each activity and the gains that Jake made. She also noted that she took advantage of the activities he really enjoyed by making them more difficult. For example, he really enjoyed bingo. Thus, Emily

challenged him to play “bingo blackout,” meaning that he had to fill the entire bingo board with chips. Emily explained these activities helped Jake improve substantially, noting he mastered diagraphs, as well as various sound blends. Emily’s Graph of Jake’s Progress is presented below:



Reflection and Self-Evaluation

In the final section of the project, pre-service teachers reflect on their performance and link their performance to pupil learning results, using the rubric from the Project as a

guide for reflection. They evaluate their performance and identify future action for improved practice and professional growth. Emily reflected:

It is without a doubt that I consider this instructional unit with Jake to be a major success, which the data support. Not only did Jake's score on the spelling inventory drastically improve, he was placed into the next spelling stage, thus having his spelling and reading abilities flourish.

At the start of the unit, Jake struggled a little when spelling, thus placing him in the Letter Name-Alphabetic spelling stage. His major difficulty was with beginning sound diagraphs, which could be seen in the pre-assessment. However, once Jake participated in the three learning activities, he was able to gain the necessary skills needed in order to improve. When the instructional unit was concluded, Jake scored in the Within Word Pattern spelling stage, and he was better able to identify, recognize, pronounce, and spell beginning sound diagraph words.

I believe that the creativity of my learning activities was the strong point of this instructional unit, thus helping my impact be a success. However, nothing is ever perfect, and there is always room for improvement. With that being said, I would most definitely make some minor changes in the unit if I were to use it again in the future. I would have some of the activities focus on the letter blends found in the early stage of Within Word Pattern. By doing this, the unit would highlight both diagraphs and blends, and engage the pupil more thoroughly, essentially improving the instructional unit and the learning of the pupil based on

assessment results. By emphasizing both of these spelling objectives, it would hopefully bring even more success to the unit.

The Results From Three Years of Data

This section explains how we analyzed the results for the first three years of implementing the project. It also shows how we used the data collected from the rubric and students' reflections to change the way we introduce the students to the project and assist them throughout their teacher preparation program.

With input from cooperating teachers, college supervisors evaluate the projects. Since the assignment lasts anywhere from several days to several weeks, supervisors rely on the written analysis the pre-service teachers complete. Although all six categories of the rubric are graded during the field experience (see "Major Components" previously discussed), only three are judged on the project completed during student teaching: design for instruction, analysis of pupil learning, and reflection and self-evaluation. These three categories are evaluated as part of the e-portfolio, which all pre-service teachers complete. Therefore, the results discussed in this section will focus on the three components listed below.

Rubric for Criteria 4, 5, and 6

Criterion	Unsatisfactory	Satisfactory	Above Average
#4--Design for Instruction and Assessment	<ul style="list-style-type: none"> • Does not incorporate community and classroom factors or diverse pupils' characteristics; • fails to align with objectives; • relies on one approach; • little or no variety of formal/informal assessments; • not adapted to 	<ul style="list-style-type: none"> • Incorporates community and classroom factors and diverse pupils' characteristics; • aligns with objectives; • uses variety of approaches; • some variety of formal/informal assessments conducted before, during and after 	<ul style="list-style-type: none"> • Incorporates a wide variety of community and classroom factors and diverse pupils' characteristics; • aligns perfectly with objectives; • uses wide variety of approaches; • good variety of formal/informal assessments conducted before, during and after

	learning needs of diverse pupils; <ul style="list-style-type: none"> • assessment measures not designed to assess progress in learning 	instruction; <ul style="list-style-type: none"> • adapted to needs of diverse pupils; • assessment measures somewhat designed to assess progress in learning 	instruction; <ul style="list-style-type: none"> • adapted to needs of diverse pupils; • assessment measures effectively designed to assess progress in learning
#5--Analysis of Student Learning	<ul style="list-style-type: none"> • Data not summarized in graphs or tables; • interpretation fails to include evidence of impact on learning 	<ul style="list-style-type: none"> • Data summarized in table or graph format; • data correctly analyzed and interpreted for evidence of impact on learning 	<ul style="list-style-type: none"> • Data accurately summarized in table or graph format with descriptive statistics; • data correctly and meaningfully analyzed and interpreted for evidence of impact on learning
#6--Reflection on Student Learning	<ul style="list-style-type: none"> • Discusses implications of results for instruction for class as a whole; • identifies few or no changes in teacher actions; • does not evaluate teaching strengths and weaknesses 	<ul style="list-style-type: none"> • Discusses implications of results for instruction for individual pupils; • identifies actions needed to improve pupil learning based on assessment results; • evaluates teaching strengths and weaknesses 	<ul style="list-style-type: none"> • Meaningfully discusses implications of results for instruction for individual pupils at different levels; • identifies and explains further actions to improve pupil learning based on assessment results; • evaluates teaching strengths and weaknesses and identifies areas for professional growth

The rubric contains three levels of achievement for each category: unacceptable, acceptable, and exemplary. These gradations were assigned the following points in order to align with our accountability management system to which our College subscribes: 1, unsatisfactory; 2, satisfactory; and 3, above average.

We implemented the project during the Fall 2006 semester in our elementary and secondary education intensive field experiences. During the Spring 2007 semester, we implemented the project in the student teaching experience as well, guaranteeing all pre-service teachers had the opportunity to complete the initial project prior to student

teaching. As a faculty we discussed the meaning of the levels of achievement for each category.

The sample included 139 pre-service teachers who were enrolled in the education program. Students were rated on a 3-point scale (1=Unsatisfactory, 2=Satisfactory, and 3=Above Average) on three separate criteria (Design for Instruction and Assessment, Analysis of Student Learning, and Reflection on Student Learning) during their field experience and again during student teaching. T-tests were calculated to determine if any significant differences between the scores for field and student teaching existed. Table 1 displays the mean scores for field and student teaching. As depicted in the second and third columns, the means tend to decline from field to student teaching. However, only “Reflection on Student Learning” resulted in statistically significant differences between field experience and student teaching. The differences in “Design for Instruction” and “Assessment and Analysis of Student Learning” were not significantly different ($p \leq .05$)

**Table 1: Means and t-values by criterion and experience
(n=139)**

Criterion	Field Experience	Student Teaching	t-value
Design for Instruction and Assessment	2.76	2.67	1.74
Analysis of Student Learning	2.68	2.58	1.61
Reflection on Student Learning	2.71	2.60	2.02 *

As stated earlier, our goal was to have the pre-service teachers become more proficient in analyzing their impact on learning and modify their instruction or objectives to improve achievement by (1) determining the effect of instruction on all pupils' learning; (2) guiding decisions about future instruction and plans to improve upon every

pupil's performance; (3) communicating performance results to others; and (4) reflecting on their performance as teachers.

The pre-service teachers are demonstrating competency in “Design for Instruction and Assessment,” as well as “Analysis of Student Learning.” Campbell and Evans (2000) note that it is difficult to identify pre-service teachers’ assessment decisions because each context is different and complex. They expound, “Because evaluation of pupil learning is a major component of teaching responsibilities, one must have a better understanding of preservice teachers’ attitudes, beliefs, behaviors, and environmental pressures as related to the practice and use of classroom assessment” (354). The pre-service teachers seem to be aware of this complexity as demonstrated in their ability to redesign instructional strategies as a result of formative assessments. Having learned in the college classroom about the different methods to help pupils achieve the objectives, the pre-service teachers were able to implement them in their classrooms. As seen in Emily’s “Design for Instruction” (pages 13 and 14), she was able to utilize various instructional strategies that appealed to her pupil’s interests. The pre-service teachers also demonstrated their ability to communicate performance results to others and reflect on their performance through their visual representation of pupil learning growth, as well as through their narratives, as explained earlier in the paper. From the written analysis of the project, pre-service teachers knew that observable objectives formulated from backward design (as previously discussed) were imperative to formulating successful instructional strategies. They also admitted to “trial and error” and modifications as they worked with students who continued to struggle with meeting the objectives. Emily wrote:

...Jake and I completed the word sort together. He seemed to really enjoy this activity, and he was actively engaged throughout. Since Jake was proving his ability in completing this task, I had him complete the word sort for a second time with no assistance. He really enjoyed this, and it was as if he was in a competition with himself, trying to complete the word sort as quickly as possible. Lastly, I had Jake select one word from each of the beginning digraphs and create a sentence using that word. This was originally not planned, but I was curious to see how Jake would respond to this task, and I wanted to make sure that he was fully comprehending the activity. I was pleasantly surprised! Jake's sentences were creative and proved his comprehension of the activity.

We are currently analyzing why the decline, specifically in "Reflection on Student Learning," occurs in student teaching. We believe there are several reasons for this phenomenon. First, the demands on pre-service teachers during their student teaching experience are much more multidimensional and multifaceted. During field, the students' major assignment is to implement the impact on student learning project. In student teaching, however, the students have to learn the curriculum, daily routines, and policies, as they are assume the larger role as teacher. It is even more difficult if the context they experience in their field placement varies greatly from their student teaching assignment because time is spent acclimating to the new context. This larger workload may preclude ample time to implement the project and analyze the data as those students field do.

Finally, those who supervise in the field are full-time faculty teaching the education course in tandem with the field experience. Thus, pre-service teachers have

more opportunities to meet with the instructor for individual assistance in implementing and analyzing the project. Since our student teaching supervisors are not part of our full-time faculty, there is limited time to meet as a group. Instead, these supervisors receive much of their communication through memos and e-mail messages, disallowing for discussion that would help assure inter-rater reliability. Moon, Callahan, and Tomlinson (1999) purport student teachers need assistance in adjusting to the complexities of diverse classrooms, which often loses priority in the multi-dimensions of mentoring. Since it is our intent to have our pre-service teachers become more analytical and reflective in their practice, we plan to work more closely with our student teaching supervisors to make this project more of an important focus.

Concluding Thoughts

We are pleased with the results collected from three years of implementing this project. However, we realize that several issues need to be addressed.

First, the pre-service teachers have not provided evidence of growing conceptual understandings among their pupils or of their pupils' ability to analyze, synthesize, and evaluate information. The reason may be in the way the students construct their project with their pupils. For example, they must collect quantifiable data from their pupils' assessments in order to show growth. These kinds of data are more readily collected by measuring increases in skill development, which does not lend itself to analysis, synthesis, and evaluation. This issue is being more fully discussed in the higher-order thinking class pre-service teachers must complete, as well as including it as a criterion on the rubric. Even if the pre-service teachers' reflections are culled from

their perceptions and interactions with the pupils—not from quantifiable data-- it will provide them with an awareness that may be currently lacking.

Also, since first implementing the project, we have made changes in introducing the project to the pre-service teachers. In the fifth semester (the first semester of the Teacher Education Program), students complete a learning theory course, where they are introduced to stages of cognitive, social, and emotional development. They are also introduced to basic lesson planning. During that semester, we teach “backward design,” having students decide on ways to measure what is being learned. From there, students write objectives and formulate methods of instruction, along with appropriate activities. During their first field experience, they are specifically assigned to reflect on the lessons they are observing through the lens of backward design. In the sixth semester, we introduce differentiated instruction—its purpose and design. Students now include in their lesson plans specific ways they will address students who need more assistance, using scaffolding as the essential component. During this field experience, students are asked to reflect on the types of differentiated instruction they have observed, specifically detailing why and how the teacher implemented it and reflecting on the results. During the seventh semester, students continue to learn in their higher-order thinking class ways to devise more differentiated methods and to reflect critically on the results of that instruction. In this semester, students must demonstrate the connection of their plans to the developmental stage of their pupils.

As we continue in the process of improving our students’ implementation of assessing individual pupil learning, we are expecting improved results in the students’ projects, especially in their ability to reflect critically on the results of their pupils’

learning. However, Emily's comment below is typical of the self-awareness the pre-service teachers have received from the experience:

I understand I will have to improve upon my skills as a teacher and have tons of room for professional growth since I am new to this and had only one pupil to work with for this project. I also have to remember I am not going to be able to get to everyone on an academic level. The most important thing for me to do is to try as much as I can, to be flexible in my instruction and teaching techniques, and be patient so that I know I have touched upon every possible angle to be an effective teacher who can make a difference.

Reflective comments, such as this one, help validate the importance of the project to the pre-service teachers' growth as they make the transition from student to teacher.

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